# United States Patent [19]

**Stoy et al.**

[11] **4,026,296**

[45] **May 31, 1977**


[54] **HYDROPHILIC SURGICAL TUBULAR DEVICE**


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[22] Filed: **Mar. 3, 1975**

[21] Appl. No.: **554,625**

[30] **Foreign Application Priority Data**

Mar. 19, 1974 Czechoslovakia ..... 1981/74

[52] **U.S. Cl.** ..... **128/349 B;** 128/351

[51] **Int. Cl.²** ..... **A61M 25/00**

[58] **Field of Search** ..... 128/348–351, 128/334, 343; 3/1



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[57] **ABSTRACT**

The invention relates to surgical tubular devices, such as catheters, tracheal or gastric intubation or sounding tubes, tubes for removal of tracheal or pulmonary secretions, and cyctoscopes designed to be temporarily introduced into cavities of living body and consisting of entirely or partially of a hydrophilic copolymer of acrylonitrile with either acrylamide or acrylic acid and, if desired, with a small amount of other co-monomers. The copolymers are swellable in water and aqueous solutions. In the swelled condition they are pliable, elastic and strong. Their properties can be changed by changing the degree of hydrolysis, if the copolymer was prepared by partial hydrolysis of polyacrylonitrile, or by changing the content of hydrophilic units, if the copolymer was obtained by copolymerization of a monomer mixture.

The outer layer or surface layer of the part to be introduced into the cavities of living body such as the larynx, trachea, urethra, etc., contains neutralized anions in side-substituents such as carboxylic, sulphonic, sulphuric or phosphoric groups attached to the copolymer main chain by covalent bonds. The part expected to be exposed to the atmosphere during the application to the patient is permanently protected against drying by a layer of a polymer or copolymer impermeable for water and water vapors.


**6 Claims, 6 Drawing Figures**